

WHAT IS CLAIMED IS:

1. A long term oxygen therapy system comprising:

5 an oxygen supply;

at least one conduit having a first end connected to the oxygen supply  
and a second end passing through the thoracic wall and lung of a patient  
thereby establishing fluid communication between the oxygen supply and the  
10 inner volume of the lung; and

a sealing device connected to the at least one conduit, the sealing  
device providing a fluid tight seal between the at least one conduit and the  
thoracic wall.

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2. A long term oxygen therapy system comprising:

an oxygen supply;

20 a valve;

a first conduit having a first end connected to the oxygen supply and a  
second end connected to the valve;

25 at least one second conduit having a first end connected to the valve  
and a second end having multiple branches, one of the branches passing  
through the thoracic wall and lung of a patient thereby establishing fluid  
communication between the oxygen supply and the inner volume of the lung,  
and another of the branches passing through a bronchus of a patient thereby  
30 establishing fluid communication between the oxygen supply, the inner volume  
of the lung and the bronchus; and

sealing devices connected to the multiple branches, the sealing devices providing a fluid tight seal between the one of the branches passing through the thoracic wall and lung of the patient and the thoracic wall and a fluid tight seal between the other of the branches passing through a bronchus of the patient and the thoracic wall of the patient.

3. A method for treating hypoxemic patients having chronic obstructive pulmonary disease, the method comprising:
  - 10 creating an anastomotic opening extending from the thoracic wall and into the inner volume of a lung;
  - supplying oxygen from a source directly into alveolar tissue of a lung through a conduit extending from the oxygen source and into the lung through the anastomotic opening; and
  - 15 establishing a fluid tight seal between the anastomotic opening and the conduit.

- 20 4. A method for treating hypoxemic patients having chronic obstructive pulmonary disease, the method comprising:
  - creating an anastomotic opening extending from the thoracic wall and into the inner volume of a lung;
  - 25 supplying oxygen from a source directly into alveolar tissue of a lung through a conduit extending from the oxygen source and into the lung through the anastomotic opening;
  - 30 establishing a fluid tight seal between the anastomotic opening and the conduit; and
  - venting air from the lung into the bronchus through a second conduit.